UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,567	09/16/2003	Margaret May-Som Wu	CJB-0303	2983

7590 01/26/2005

ExxonMobil Research and Engineering Company
P.O. Box 900
Annandale, NJ 08801-0900

EXAMINER	
LEE, RIP A	

ART UNIT	PAPER NUMBER
1713	

DATE MAILED: 01/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/663,567	WU ET AL.	
	Examiner	Art Unit	
	Rip A. Lee	1713	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-13* is/are pending in the application.

4a) Of the above claim(s) *10-13* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☒ Claim(s) *1-13* are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *05-05-04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:

   I. Claims 1-9, drawn to a method of forming polymer, classified in class 526, subclass 89.

   II. Claims 10-13, drawn to an ethylene/α-olefin copolymer, classified in class 528, subclass 396.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions have not been disclosed as capable of use together. One invention is drawn to a method of forming a polymer, and the other invention is drawn to a general polymer having certain properties. The polymer is not necessarily prepared from the process of invention I. Furthermore, the two inventions have different functions. The function of the first invention is to make polymer. The function of the second invention depends on its end use – a lubricant, a pour point depressant, or a plasticizer.

3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

4. Because these inventions are distinct for the reasons given above and the search required for Group I is not required for Group II, restriction for examination purposes as indicated is proper.

5. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art because of their recognized divergent subject matter, restriction for examination purposes as indicated is proper.

6. During a telephone conversation with Estelle C. Bakun on January 13, 2005, a provisional election was made with traverse to prosecute the invention of group I, claims 1-9. Affirmation of this election must be made by applicant in replying to this Office action. Claims 10-13 have been withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

7. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claim 1 is rejected under 35 U.S.C. 102(e) as being anticipated by U.S. Patent No. 6,660,894 to Wu *et al.*

The prior art of Wu *et al.* teaches a process of preparing a polymer of ethylene and propylene using the metallocene based catalyst, Cp_2ZrCl_2/MAO (Example II). The core of the invention is based on upgrading the polyolefin product by contacting it with a first solid material comprising a hydrogenation catalyst followed by a second solid material comprising an isomerization catalyst (claim 1). The inventors also state that an alternative method involves contact of the polyolefin product with the second solid material prior to contacting the first solid material. In particular, the isomerization catalyst is typically a zeolite in its acidic (hydrogen) form (col. 4, line 43). As such, the subject matter of the present claim 1 is disclosed fully in Wu *et al.*

Claim Rejections - 35 USC § 103

10. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

11. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

12. Claims 2-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 6,660,894 to Wu *et al.* in view of U.S. Patent No. 6,124,513 to Heilman *et al.*

The discussion of the disclosures of the prior art of Wu *et al.* from paragraph 9 of this office action is incorporated here by reference. The example furnished in the patent is silent with respect to the comonomer content of the ethylene-propylene copolymer. One of ordinary skill in the art, however, would have found it obvious to arrive at the broad and unexceptional range recited in present claim 2. Even if the skilled artisan were woefully at a loss to determine a working ratio, he needs only to turn to Heilman *et al.* to learn that ethylene-alpha olefin polymers, used specifically for lubricants, are derived typically from 2-80 mole % of ethylene and 15-90 % of comonomer (claim 1). Thus, it would have been obvious to one having ordinary

skill in the art to use arrive at the subject matter of present claim 2 by using the ethylene-alpha olefin ratio prescribed in Heilman *et al.* in the process of Wu *et al.* The combination is obvious because both references teaches use of ethylene-alpha olefins for lubricants and, in light of the fact that the process taught by Wu *et al.* is a general one, the skilled artisan would have expected such a combination to work. The subject matter of claim 3 is obvious over the prior art since it teaches use of propylene, which is a C_3 alpha olefin.

Regarding claim 4, Wu *et al.* teaches polymerization using in absence of H_2, but the text is silent with respect to the reaction conditions. Both temperature and pressure ranges recited in the claim are broad an unexceptional. One of ordinary skill in the art would have found it obvious to arrive at these conditions in light of the fact that Heilman *et al.* shows that such polymerizations may be carried out at about 50 °C and 15 psi (103 kPa) (example 1). It would have been obvious to one having ordinary skill in the art to use these practical reaction conditions in the process of Wu *et al.* because the prior art teaches that these conditions work successfully in producing polymer. One of ordinary skill it the art also would have found it obvious to arrive at the reaction conditions described in claims 5 and 6 because Wu *et al.* teaches that isomerization takes place at 190-240 °C (col. 5, line 11), and hydrogenation is performed at about 180-230 °C and 0-2000 psi (col. 4, line 62). Example II shows that both isomerization and hydrogenation are carried out at 220 °C and 500 psi (3447 kPa). As the name implies, hydrogenation takes place in the presence of H_2; no hydrogen is required for isomerization – the zeolite is made acidic (hydrogen form) by ion-exchange with mineral acid or treatment with base followed by calcination (col. 4, lines 25-51).

As with claim 3, the subject matter of claim 7 is obvious in light of the disclosure of Wu *et al.*, which teaches use of propylene comonomer. The subject matter of claim 8 is obvious in view of the fact that Heilman *et al.* teaches use of more than one alpha olefin comonomer (see claim 1) to make polyolefins for lubricants. One of ordinary skill in the art would have found it obvious to arrive at the process of claim 8 because such an embodiment is taught in the prior art. Since the process taught by Wu *et al.* is a general one, the skilled artisan would have expected such a combination to work.

The objective of the invention of Wu *et al.* is to upgrade a polyolefin product so that it displays oxidative and thermal stability required in a lubricant oil while maintaining sufficiently high viscosity index and low pour point (col. 1, line 41 – col. 2, line 18). Heilman *et al.* shows that preferred products which exhibit oxidative and thermal stability have a bromine number (measure of unsaturation) of 0 to 1.0 (col. 6, line 48) while exhibiting high kinematic viscosity and low pour point. Thus, regarding claim 9, one of ordinary skill in the art would have found it obvious to obtain a sufficiently hydrogenated product such that it possesses a similar bromine number. One of ordinary skill in the art would have found it obvious to arrive at this notion because he would want to make a lubricant with the desired oxidative and thermal stability characteristics.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Rip A. Lee whose telephone number is (571)272-1104. The examiner can be reached on Monday through Friday from 9:00 AM - 5:00 PM. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu, can be reached at (571)272-1114. The fax phone number for the organization where this application or proceeding is assigned is (703)872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on the access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll free).

ral

January 24, 2005